

WHAT IS CLAIMED:

1. A flexible intravascular stent for use in a body lumen, comprising:
a plurality of cylindrical rings interconnected to form the stent, each
cylindrical ring having a first delivery diameter and a second implanted diameter;
5 each cylindrical ring having a proximal end and a distal end defining a
cylindrical wall extending circumferentially between the proximal end and the distal
end of the cylindrical ring; and
at least one flexible link attaching each cylindrical ring to an adjacent
cylindrical ring, the link including a bounded aperture disposed in the link between the
10 cylindrical rings, with the bounded aperture having at least one aperture defining
portion disposed generally transverse to the stent longitudinal axis.
2. The stent of claim 1, wherein the bounded aperture comprises two
aperture defining portions generally perpendicular to the stent longitudinal axis.
3. The stent of claim 2, wherein the bounded aperture comprises an ellipse.
- 15 4. The stent of claim 3, wherein the major axis of the ellipse is generally
perpendicular to the longitudinal axis of the stent.
5. The stent of claim 2, wherein the bounded aperture is in the shape of a
dog bone.

6. The stent of claim 2, wherein the bounded aperture is generally rectangular.

7. The stent of claim 2, wherein each cylindrical ring is nested within an adjacent cylindrical ring.

5 8. The stent of claim 2, further comprising an undulating link.

9. The stent of claim 8, wherein the undulating link comprises at least one bend connected to a substantially straight portion disposed generally perpendicular to the stent longitudinal axis.

10 10. The stent of claim 9, wherein the undulating link is positioned substantially within the cylindrical wall of the cylindrical ring.

11. The stent of claim 2, wherein each cylindrical ring comprises peaks and valleys in phase with the peaks and valleys of an adjacent cylindrical ring.

12. The stent of claim 1, further comprising at least one tapered link portion connecting the link to the aperture portion.

15 13. The stent of claim 12, further comprising a radiused link portion, connecting the tapered link portion to the aperture link portion.

14. The stent of claim 1, wherein the stent is formed from stainless steel.

15. The stent of claim 1, wherein the stent is formed from a shape memory alloy.

16. The stent of claim 1, wherein the stent is formed from a pseudo-elastic
5 metal alloy.

17. A flexible intravascular stent for use in a body lumen, comprising:
a plurality of cylindrical rings interconnected to form the stent, each
cylindrical ring having a first delivery diameter and a second expanded diameter,
each cylindrical ring having a plurality of peaks and valleys; and
10 at least one link attaching each cylindrical ring to an adjacent cylindrical
ring, the link including (1) an aperture disposed in the link between the cylindrical
rings, (2) an aperture defining link portion disposed generally perpendicular to the stent
longitudinal axis, and (3) a tapered portion connecting the link to the generally
perpendicular portion.

18. The stent of claim 17, wherein the link further comprises a raduised
15 portion connecting the tapered portion and the perpendicular portion.

19. The stent of claim 18, wherein the aperture is shaped as one of a) an oval,
b) a dog bone, or c) a rectangle.

20. The stent of claim 18, further comprising an undulating link portion with at least one substantially straight portion disposed generally perpendicular the stent longitudinal axis.

21. The stent of claim 20, further comprising a second undulating link
5 portion, wherein the aperture is disposed between the two undulating portions.

22. The stent of claim 20, wherein the substantially straight portion of the at least one undulating link is perpendicular to the stent longitudinal axis when the stent is in a first delivery diameter configuration and when the stent is in a second expanded diameter configuration.

10 23. The stent of claim 22, wherein the undulating link comprises a plurality of straight portions disposed generally perpendicular to the stent longitudinal axis.

24. The stent of claim 17, wherein each cylindrical ring comprises peaks and each ring's peaks are in phase with the peaks of the adjacent cylindrical ring.

25. The stent of claim 17, wherein the stent is formed from a tube.

15 26. The stent of claim 17, wherein the cylindrical rings are defined by a plurality of struts, wherein at least one of the struts has a varying cross-section.

27. A flexible intravascular stent for use in a body lumen, comprising:

a plurality of cylindrical rings interconnected to form the stent, each cylindrical ring having a first delivery diameter and a second expanded diameter;

the cylindrical rings having a plurality of U-shaped portions, Y-shaped portions, and W-shaped portions that are expandable;

5 each cylindrical ring having a proximal end and a distal end defining a cylindrical wall extending circumferentially between the proximal end and the distal end of the cylindrical ring; and

at least one flexible link attaching each cylindrical ring to an adjacent cylindrical ring, the link including a bounded aperture, the aperture being defined in
10 part by two aperture defining link portions disposed generally perpendicular to the stent longitudinal axis and being connected to the link by two tapered and radiused link portions disposed on opposite sides of the aperture.

28. The stent of claim 27, wherein the aperture is configured in one of a generally rectangular, oval, or dog bone shape.

15 29. The stent of claim 28, further comprising undulating links with a plurality of bends.

30. The stent of claim 28, wherein each cylindrical ring is nested within an adjacent cylindrical ring.

31. The stent of claim 28, wherein the stent is formed from a tube.

32. The stent of claim 27, wherein the cylindrical rings are defined by a plurality of struts, wherein at least one of the struts has a varying cross-section.

33. The stent of claim 32, wherein at least some of the struts have a variable thickness in the radial direction.

5 34. The stent of claim 28, wherein the Y-shaped portions are formed from the combination of the U-shaped portions with the undulating links.

35. The stent of claim 28, wherein the W-shaped portions incorporate at least a portion of the undulating links.